

Listing of Claims:

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1. (Previously presented) An ultrasound system comprising:
an ultrasound probe comprising a plurality of transducer elements configured for sensing ultrasound signals and converting the ultrasound signals to analog electrical signals, the ultrasound probe configured for transmitting the analog electrical signals;
an optical conduit comprising an electro-optic modulator configured for
(a) receiving the analog electrical signals,
(b) receiving optical signals from a light source, and
(c) modulating the optical signals with the analog electrical signals;
wherein the optical conduit is configured for transmitting the modulated optical signals to an optical detector.
2. (Previously Presented) The ultrasound system of claim 1, wherein the electro-optic modulator comprises a plurality of electro-optic modulators.
3. (Previously Presented) The ultrasound system of claim 2, wherein the electro-optic modulators each comprise a polymer material or silicon.
4. (Original) The ultrasound system of claim 2, wherein the ultrasound probe further comprises:
an amplifier configured for amplifying the analog electrical signals.
5. (Previously Presented) The ultrasound system of claim 2, wherein the plurality of transducer elements comprises a plurality of sets of transducer elements and wherein the optical conduit further comprises:
a plurality of multiplexers, each configured for coupling a corresponding one of the electro-optic modulators and a corresponding set of the transducer elements and conducting electrical signals of a selected one set of transducer elements to the corresponding one of the electro-optic modulators.
6. (Previously Presented) The ultrasound system of claim 5, wherein the ultrasound system further comprises a plurality of demultiplexers configured for demultiplexing the optically modulated analog signals received from the electro-optic modulators.

7. (Original) The ultrasound system of claim 1, wherein the ultrasound probe further comprises a plurality of cooling lines configured for maintaining a probe temperature.

8. (Original) The ultrasound system of claim 1, wherein the light source comprises a laser source.

9. (Previously Presented) The ultrasound system of claim 8, further comprising the optical detector, wherein the optical detector is configured for converting the optically modulated analog signals to corresponding digital signals.

10. (Previously Presented) A method for generating an image, the method comprising:
sensing ultrasound signals,
converting the ultrasound signals to analog electrical signals;
receiving optical signals from a light source;
modulating the optical signals with the analog electrical signals to generate a corresponding plurality of optically modulated analog signals;
converting the plurality of optically modulated analog signals to a corresponding plurality of digital signals; and
processing the plurality of digital signals to generate the image.

11. (Original) The method of claim 10, wherein the plurality of signals comprise ultrasound signals.

12. (Previously Presented) The method of claim 11, wherein sensing further comprises amplifying the electrical signals.

13-16. (Canceled)